

rejection of the barbarous *Argyope*, which has obtained currency with Lucas, Walckenaer and others. Latreille\* has changed it (on what grounds I know not) to *Argyopes*, making it a masculine; and he is followed by Sundevall, Koch, Keyserling, and others. It is desirable that the genus should henceforth resume its original and correct name—*Argiope*, Sav. & Aud.

XIX.—*Observations on some of the Heliotropiææ.*

By JOHN MIERS, F.R.S., F.L.S., &c.

[Concluded from p. 133.]

MESSERSCHMIDTIA.

The late Mr. Robert Brown (in 1810) pointed out the necessity of constituting a distinct genus for those species of *Tournefortia* which differed from all the others in having the border of the corolla cleft into subulate lobes, a baccate fruit containing four nucules (each unilocular and monospermous), the seed with a very curved embryo and a superior radicle (Prodr. p. 496); but he omitted giving a name to the genus. In 1819 Römer and Schultes adopted this view, calling the genus *Messerschmidtia*, a name previously given by Linnæus to those species of *Tournefortia* which have a fruit with two nucules, each 2-celled. As such characters, according to their showing, belonged to *Tournefortia* proper, the *Messerschmidtia* of Linnæus naturally fell to the ground. Adopting it, therefore, for the group in question, they enumerated eleven species, all natives of the New World, mostly climbing or subscandent plants; but it is strange that among these there appears only one species that answers to the essential characters of their own generic diagnosis. G. Don (1837), following the same train, amplified the species to twenty-four, in total disregard of the distinguishing features of *Messerschmidtia*, associating with them several belonging to *Heliophytum*. Endlicher (1838) acknowledged the genus, and gave it a tolerably correct diagnosis, though with some few errors. By some authors the name has been applied to other very different groups, selected from *Tournefortia*; and this has caused no little confusion. DeCandolle, in his elaboration of the *Borraginææ* (in 1845), quite ignored *Messerschmidtia* as a genus, admitting neither that of Linnæus nor of Römer and Schultes; but he retained this name, as a section, for a small number of species of *Tournefortia* possessing very different characters (Prodr. ix. 528).

\* Cuvier's Règne Animal, nouv. éd. iv. p. 70 (1829).

Frésenius (in 1857), in Mart. Flor. Bras., enumerated twenty-six Brazilian species of *Tournefortia*, among which are several belonging to *Messerschmidia*; but he did not adopt this name, even as a section, apparently unaware of the peculiar structure of its fruit: the species of both these genera are therefore indiscriminately mingled together in that work. In order to clear away the mystification engendered by these several discordant views, it appears necessary to define the true limits of *Messerschmidia* with greater accuracy—a task of no great difficulty, as I have found its characters constant in all the species I have examined. It may readily be distinguished from *Tournefortia* and *Heliophytum* by its four monospermous nucules, in which respect, however, it accords with *Heliotropium*; but it differs from all those genera in the greater length of its narrow acuminate sepals, in the narrow segments of the border of its corolla, which are cleft to the base, in the hippocrepiform duplicature of its carpels, in the depressed form of its 4-lobed fruit, in the extreme curvature of its embryo, and generally in its climbing habit. *Heliophytum* and *Heliotropium* differ in the very imbricated æstivation of the lobes of their corolla. In *Tournefortia*, where the lobes of the border are not cleft to the base, these are simply folded together in a plicato-valvate æstivation, while the intermediate plicatures in the sinus of the lobes make a fornix over the mouth of the tube. In *Messerschmidia* the extremely narrow lobes of the border in the bud are quite involute by the rolling inwards of their margins, the æstivation being thus subvalvate, not by the margins, but by the juxtaposition of the rounded inflected surfaces of the lobes.

MESSERSCHMIDTIA, R. & Sch. (non Linn.).—*Sepala* 5, longe linearia, sæpe setiformia, erecta, tubum corollæ sæpe æquantia, persistentia. *Corolla* tubulosa, tubo angusto, plicis 5 longitudinalibus sulcato, cum angulis nervigeris, supra medium paululo inflato, fauce constricta, limbo ad basin 5-partito, laciniis linearibus vel anguste lanceolatis, stellatim expansis, æstivatione involutiva. *Stamina* 5, inclusa, infra faucem fere sessilia; *filamenta* brevissima, longe supra medium tubi orta, tenuia; *antheræ* obconice oblongæ, tubo 6-plo breviores, imo sagittatæ, dorso ad sinum affixæ, apicibus mucronatis pilosulis circa stigma fornicatim cohærentes, 2-loculares, loculis collateralibus rima longitudinali lateraliter dehiscentibus, glabræ. *Discus* parvus, hypogynus, margine crenulato. *Ovarium* conico-oblongum, in stylum gradatim angustatum, disco insitum, 4-loculare, loculis 1-ovulatis; *ovulo* suspensio. *Stylus* longiusculus, filiformis,

stamina attingens, glaber, apice incrassatus et turbinatus; stigma obtuse conicum, 4-sulcatum, pilosum. Fructus baccatus, parce carnosus, globose 4-gaster, depressus, in medio umbilicatus et styli vestigio notatus; pyrenæ 4, demum separabiles, dorso convexæ, intus angulatæ, hippocrepe plicatæ, carunculatæ, et hinc primum cohærentes, osseæ, indehiscentes, 1-loculares, 1-spermæ: semen hippocrepe curvatum; integumentum tenue; albumen parcum, carnosum; embryo conformis, cotyledonibus ovato-oblongis, foliaceis, incumbenter arcuatis, radícula supera ad stylum spectante 6-plo longioribus.

Suffrutices *Americani*, plerumque *Brasilienses*, sæpius *subscandentes*; ramis tenuibus, sæpe *fistulosis*; folia *alterna*, *petiolata*, *oblonga*, *integra*, *glabra*, aut *adpresse pilosa*: inflorescentia *axillaris et terminalis*, *divaricatim vel dichotome ramosa*, ramis *ultimis spicatifloris*, apice *recurvatis*; flores *parvi*, 1-*laterales*, *crebri*, *sessiles aut brevissime pedunculati*, *ebracteati*.

\* Paniculæ axillares et subterminales.

1. *Messerschmidtia subulata*, Gardn. Lond. Journ. Bot. i. 532;—*Tournefortia Gardneri*, A. DC. Prodr. ix. 526; *Fresen. in Mart. Fl. Bras. xix. p. 54*;—*Tournefortia lanceolata*, *Fres. l. c. p. 55*;—*scandens*, ramulis teneribus, *fistulosis*, *pilosiusculis*; foliis *oblongo-lanceolatis*, *acuminatis*, imo *rotundatis*, *submembranaceis*, utrinque *rugulosis et sparse adpressovillosulis*; petiolo *pilosulo*, limbo 12-plo brevior: paniculis *axillaribus et terminalibus*, *pubescentibus*, *brevibus*, *crebre alternatim ramosis et spicatifloris*; sepalis *lobisque corollæ longe subulatis*; baccis 4-gastris.—In Brasilia: *v. v. prov. Rio de Janeiro (Jurujuba, Botafogo, et Rio Cumprido)*; *v. s. Tejuco (Gardner, 175)*.

A slender climbing plant; frequent in the neighbourhood of Rio de Janeiro: its long slender branches are  $\frac{1}{2}$  line thick, with axils about 2 inches apart; leaves 2–3 $\frac{1}{2}$  inches long, 9–14 lines broad, on a slender petiole 2–3 lines long; panicle  $\frac{1}{2}$  inch long, branching from the base with three or four alternate curving branches  $\frac{1}{2}$  line apart, each 6 lines long, with about twelve sessile flowers closely uniserial on the upperside; sepals 2 lines long,  $\frac{1}{4}$  line broad at base, setiform, ciliate on margins; tube of corolla 2 lines long, pilose outside, a little swollen below the mouth; segments patent, very narrow, with inflected margins 3 $\frac{1}{4}$  lines long; stamens cohering in the mouth by their barbated summits; style long, slender, swollen above, with an annular ring terminated by a conical pilose apex;

fruit baccate, 4-lobed, depressed, with four nuts, as in the generic diagnosis.

2. *Messerschmidtia Martii*, nob. ;—*Tournefortia Martii*, *Fresen. in Mart. Fl. Bras.* xix. p. 55 ;—subscandens, ramis teretibus, subglabris, in junioribus sparse pilosulis; foliis oblongis, imo rotundatis, gradatim angustatis, acutis, membranaceis, supra densius, subtus sparse strigoso-pilosis, pilis e tuberculis albis et adpressis; petiolo tenuissimo, pilosulo, limbo 8-plo brevior: paniculis axillaribus, laxis, bis dichotomis aut subpentastachyis, ramis subcompressis, valde divaricatis, pubescentibus, ultimis spicatifloris; floribus sessilibus, 1-serialibus, puberulis.—In Brasilia, prov. Bahia et Espirito Santo: *v. s. in herb. meo* (Rio Ilheos, Mart.).

A plant 10–20 feet high, with scandent or weak straggling branches scarcely a line in thickness, with axils 6–9 lines apart; leaves 2–3½ inches long, 1–1½ inch broad, on a very slender petiole 2½–3 lines long; peduncle 8 lines long, with two divaricating arms 5 lines long, each bearing two or three floriferous spikes 1½ inch long, with about ten or twelve somewhat distant flowers; sepals 1½ line long; tube of corolla 2 lines long, swollen below the mouth, segments narrow, 1 line long, with introflected margins; anthers cohering by their barbated summits; ovary glabrous, subglobular, distinctly 4-lobed; style swollen at its apex by a crenulated annular ring; stigma short, conical and papillose.

3. *Messerschmidtia Organensis*, nob. ;—scandens, ramis pendentibus, flexuosis, fistulosis, angulato-compressis, glaberrimis; foliis oblongis, imo rotundatis, acute acuminatis, membranaceis, utrinque glaberrimis, marginibus subrevolutis; petiolo glabro, canaliculato, limbo 8-plo brevior; axillis plerisque floriferis: paniculis supra-axillaribus, foliis paulo longioribus, glaberrimis, longe et tenuiter pedunculatis, ebracteatis, alternatim ramosis, ramis laxis, tenuibus, spicatifloris; floribus remotiusculis, breviter pedicellatis; sepalis et lobis corollæ longè subulatis.—In Brasilia, prov. Rio de Janeiro: *v. v. ad Imbuhy in montibus Organensibus*.

I found this very distinct species in 1838, growing in virgin forests. The axils are 1¼–1¾ inch apart; the leaves are 2½–3 inches long, 10–13 lines broad, on a petiole 4–5 lines long. The panicles are always supra-axillary, 2½–3 inches long, completely glabrous, on a slender naked peduncle 1–1½ inch long, bearing eight or ten alternate slender patent spicated branches 6–9 lines long. The terminal panicle is pyramidal, 6 inches long, and compound, consisting of a great many alternate

branches like the axillary panicles, but without leaves: the uniserial flowers are  $1\frac{1}{2}$ –2 lines apart, each on a pedicel  $\frac{1}{2}$  line long; the sepals are 1 line long, glabrous, with ciliated margins; the tube of the corolla 2 lines long, its segments 1 line long; the anthers cohere by their papillose summits; the style is slender, enlarged at its summit, and terminated by an oval, obtuse, pilose stigma.

4. *Messerschmidtia Blanchetii*, nob.; *Tournefortia Blanchetii*, A. DC. *Prodr.* ix. 524; *Fresen. in Mart. Fl. Bras.* xix. 52;—scandens, ramis teretibus, adpresse sericeis; foliis ovatis, acutissime acuminatis, imo obtusis, membranaceis, utrinque pilosis, subtus pallidioribus, nervis parum distinctis, petiolo limbo 10-plo brevior: paniculis axillaribus et terminalibus, divaricato-dichotomis, subferrugineo-pubescentibus; floribus in ramis ultimis spicatis sessilibus, remotiusculis; sepalis lanceolatis, acuminatis, tubo corollæ sericeæ dimidio brevioribus; limbi lobis anguste linearibus.—In Bahia (Blanchet, 1914) (*non vidi*).

A species much resembling *M. Salzmanni*. Leaves  $2\frac{1}{2}$ –3 inches long, 20–24 lines broad, on a petiole 4 lines long; flowers 3 lines long.

5. *Messerschmidtia salicifolia*, Gardn. Lond. Jour. Bot. i. 181;—*Tournefortia salicifolia*, DC. *Prodr.* ix. 531; *Fresen. in Mart. Fl. Bras.* xix. p. 55;—scandens, ramis fistulosis, angulato-compressis, subflexuosis, molliter patenter pilosis; foliis oblongo-lanceolatis, lanceolatisve, imo obtusis, a medio sensim acuminatis, supra molliter pilosulis, subtus ferrugineo-glaucis, tomentoso-villosulis, marginibus ciliatis; petiolo patenter ferrugineo-villoso, limbo 12-plo brevior: paniculis axillaribus et terminalibus, folio longioribus et suboppositis, bis dichotome geniculatim divisus, ramis alternatim ramosis et spicatifloris, villosis; floribus remotiusculis, sessilibus; sepalis lobisque corollæ acutissimis; drupis 4-gastris, pilosis.—In Brasilia ad Rio de Janeiro: *v. v. et s. Morro de Flamengo* (Gardner, n. 81).

A climbing plant, not uncommon in the neighbourhood of Rio de Janeiro, with branches 1– $1\frac{1}{2}$  line thick, geniculately flexuose at the axils, which are about 1 inch apart; the leaves are 2–4 inches long, 5–18 lines broad, on a petiole 2–3 lines long. The panicle, 2 inches long and broad, has a peduncle 6 lines long, its primary very divaricated branches 4 lines long, the secondary branchlets 3 lines long, each bearing two or three spikes 6–9 lines long, with about ten to fifteen sessile flowers  $\frac{3}{4}$  line apart; sepals 1 line long, clothed with long

hairs upon raised tubercles; tube of corolla 1 line long, with segments of equal length; anthers cohering in the mouth by their acuminate papillose summits; style glabrous, with a turbinate fringed summit, crowned by a short, oblong, pilose stigma.

6. *Messerschmidtia Vauthieri*, nob.;—*Tournefortia Vauthieri*, DC. Prodr. ix. 526; *Fresen. in Mart. Fl. Bras.* xix. 55;—scandens?, glaberrima, ramis angulato-sulcatis; foliis ellipticis, acuminatis, imo obtusis, petiolatis: paniculis axillaribus, ferrugineo-subvelutinis, folio dimidio brevioribus; sepalis corollæque lobis subulatis, tubo subvelutino dimidio brevioribus.—In Brasilia, in montibus Organensibus (*non vidi*).

From the above brief character, this species differs from *M. Organensis* in its always axillary panicles, of only half their length, and which are ferruginously velutinous; its leaves, somewhat smaller, have a comparatively longer petiole; and the flowers are pubescent. It is said to be near *M. macroloba*, but I have seen neither of them. Its leaves are stated to be  $2\frac{1}{2}$  inches long, 8–12 lines broad, on a petiole 3–5 lines long; the corolla is 2 lines long.

7. *Messerschmidtia floribunda*, G. Don, Dict. iv. 370;—*Tournefortia floribunda*, H. B. K. iii. 79; *Röm. & Sch. Syst.* iv. 541; DC. Prodr. ix. 527 (*non Fresen. in Mart. Fl. Bras.* xix. 51);—scandens, ramis teretibus, cano-tomentosis; foliis oblongis aut ovato-oblongis, acuminatis, imo rotundatis, supra tenuissime pubescentibus, subtus cano-tomentosis; petiolo teretiusculo, cano-tomentoso: paniculis axillaribus, dichotome multifidis, cano-tomentosis; spicis 20–24, filiformibus, diffusis; floribus unilateralibus, distantibus; sepalis corollæque lobis acuminato-subulatis; drupis glabris, 4-gastris.—In Cumana (*non vidi*).

Kunth does not state the length of the inflorescence or the size of the leaves; but their petioles are said to be 3 or 4 lines long. Fresenius has confounded with this species the *M. membranacea*, Gardn., which is a very different plant.

8. *Messerschmidtia macroloba*;—*Tournefortia macroloba*, DC. Prodr. ix. 527; *Fresen. in Mart. Fl. Bras.* xix. p. 55;—scandens?, glaberrima, ramis teretibus, superne obtuse angulatis; foliis elliptico-lanceolatis, longe acuminatis, imo subobtusis; petiolo limbo 12-plo brevioribus: paniculis axillaribus et terminalibus, puberulis, folio multo brevioribus; sepalis lineari-lanceolatis, corollæ tubo dimidio brevioribus,

corollæ lobis subulatis, patentibus, tubum æquantibus.—In Brasilia, Rio de Janeiro (Lotschy) (*non vidi*).

Leaves 4–5 inches long,  $1\frac{1}{2}$  inch broad, on a petiole 3–4 lines long. It is remarkable for the extreme length of the lobes of the border of the corolla.

9. *Messerschmidtia vicina*, nob.;—ramis teretibus, rugosis, lignosis; ramulis subcompressis, angulato-sulcatis, junioribus pallidis, glabris; foliis oblongis, imo obtusis, apice acuminatis, submembranaceis, supra sparse scabridulis, rigide adpresso pilosis, pilis brevibus e tuberculis majusculis albis enatis, subtus pallidioribus, rugoso-punctatis, glabris, costa tantum subpilosa; petiolo supra plano, scabridulo, limbo 12–18-plo brevior: racemis axillaribus, subglabris, geniculatim flexuosis; ramulis alternis, 3–4, gracilibus; floribus remotiusculis, parvis, sessilibus; baccis glabris, 4-gastris.—In Brasilia: *v. s. in herb. Mus. Brit.*, Penêdo, Rio S. Francisco (Gardn. 1362).

The leaves are 3–4½ inches long,  $1\frac{1}{8}$ – $1\frac{1}{2}$  inch broad, on a petiole 3 lines long; peduncle of inflorescence bare, 9 lines long, geniculated at the axils of the alternate branches, which are 5–6 lines apart, and  $2\frac{1}{2}$  diminishing to 1 inch long; sepals very narrow, 1 line long.

10. *Messerschmidtia ramiflora*, nob.;—scandens, ramis laxè ramulosis, ramulis pendentibus, fistulosis, compressis, sulcatis, subglabris; foliis oblongis, vix lanceolatis, imo acutis aut subobtusis, apice acuminatis, nervis tenerimis, utrinque immersis, glaberrimis, nisi in costa parce puberula, fusco-viridibus, opace rugulosis, concoloribus; petiolo tenui, superne tomentoso, limbo 8-plo brevior: paniculis axillaribus, multiramosis; folium excedentibus, brevissime pubescentibus; pedunculo petiolo 3-plo longior; ramis plurimis, alternis, longiusculis, simplicibus aut 2-fidis, uniserialiter spicatis; floribus remotiusculis, breviter pedicellatis; sepalis corollæque lobis longe subulatis.—In Brasilia: *v. s. in herb. Mus. Brit.*, Rio Parahybuna, prov. Minas Geraës (Gardner, 5037).

The axils are  $\frac{3}{4}$  inch apart; the leaves  $2\frac{3}{4}$ – $3\frac{1}{4}$  inches long,  $1$ – $1\frac{1}{4}$  inch broad, on a petiole 5 lines long; each axil is floriferous. The panicle is  $3\frac{1}{2}$ – $4\frac{1}{2}$  inches long, upon a bare peduncle  $1$ – $1\frac{1}{2}$  inch long, with many alternate branches, 3 lines apart,  $1$ – $2\frac{1}{2}$  inches long, often bearing a small leaflet at its base; flowers 1-serial, 1–2 lines apart, slightly pubescent; sepals  $1\frac{1}{4}$  line long; tube of corolla  $1\frac{3}{4}$ –2 lines long, below glabrous, segments 1 line long; anthers cohering by their barbate sum-

mits; ovary, style, and stigma  $1\frac{1}{4}$  line long, glabrous; style four times the length of the ovary, turbinate at its summit, with a fringed margin, supporting a pilose ovate stigma one-tenth of its length.

11. *Messerschmidtia valga*, nob.;—ramis teretibus, lignosis, lenticellatis, ramulis striatellis; foliis ovato-oblongis, imo obtusis aut in petiolum acutiuscule decurrentibus, apice subacuminatis, submembranaceis, utrinque pilis brevibus e tuberculis sparsim adpresse strigosis, supra nervis tenuibus nigris immersis, subtus paulo prominulis, livide glaucis; petiolo superne sulcato, pilosulo, limbo 5–6-plo brevior: paniculis axillaribus, folium æquantibus, parce pilosis, pedunculo petiolo æquilongo; rachi brevi, flexuosa, divaricatim bisdichotoma, aut tristachya; ramis rigidulis, spicatifloris; floribus 1-serialibus, remotiusculis; sepalis corollæque lobis longissime subulatis, valde pilosis.—In Brasilia: *v. s. in herb. Mus. Brit.*, Maceio (Gardn. 1363).

Its axils are  $\frac{3}{4}$  inch apart; the leaves are  $2\frac{1}{4}$ – $2\frac{3}{4}$  inches long,  $1\frac{1}{4}$ – $1\frac{1}{2}$  inch broad, on a petiole 5 lines long; peduncle of inflorescence 9 lines long, its two branches 4 lines long, the spicate branches, slightly curved,  $1\frac{3}{4}$  inch long; the flowers  $1\frac{1}{2}$  line apart; pedicels  $\frac{1}{2}$  line long; sepals  $1\frac{1}{2}$  line long; tube of corolla  $1\frac{3}{4}$  line, the segments  $1\frac{1}{4}$  line long; anthers very short, cohering by their apices in the mouth of the tube; pistil  $1\frac{1}{2}$  line long; style six times as long as the stigma.

12. *Messerschmidtia minuta*;—*Tournefortia minuta*, Bert. in DC. Prodr. ix. 527;—scandens?, ramis virgatis, junioribus minute puberulis; foliis anguste lanceolatis, obtusis, scabridis, petiolatis; paniculis axillaribus, conjugatim ramosis, ramis spicatifloris; floribus remotis; sepalis lanceolatis, acutis; corollæ tubo medio coarctato, limbi lobis lanceolato-acuminatissimis; drupis 4-gastris.—In Jamaica (*non vidi*).

Leaves  $1\frac{1}{2}$  inch long, 3 lines broad.

\*\* Paniculæ in ramis aut in ramulis terminales.

13. *Messerschmidtia microphylla*, nob.;—*Tournefortia microphylla*, Desv. in Ham. Prodr. p. 24 (*non Bert.*); DC. Prodr. ix. 528;—*Tournefortia lucida*, Desf. Cat. Hort. Par. p. 397 (*non Desv.*);—subscandens?, undique glaberrima, ramulis tenuissimis, teretibus, lenticellatis; foliis parvis, obovatis, imo rotundatis, a medio gradatim angustioribus, apice valde obtusis, submucronulatis, crassiusculis, obscuris, utrinque rugulosis; petiolo tenui, limbo 6-plo brevior: paniculis in ramulis terminalibus, suboppositifoliis, breviter puberulis,



bis dichotome divisis aut simplicioribus; ramulis spicatifloris, filiformibus; floribus minutis; sepalis corollæque lobis longe subulatis, puberulis.—In Antillis: *v. s. in herb. Mus. Brit.*, ins. S<sup>a</sup> Cruz (Van Rohr).

This appears to be a slender plant, with somewhat trailing branches  $\frac{1}{2}$  line thick, with axils 4–6 lines apart; leaves 7–11 lines long, 5–6 lines broad, on a petiole  $1\frac{1}{2}$ –2 lines long; the peduncle of the inflorescence is 3 lines long, its two branches 2 lines long, the spicated branchlets 6–12 lines long; the flowers  $1\frac{1}{4}$  line long, on a pedicel  $\frac{1}{2}$  line long; the sepals somewhat shorter than the tube of the corolla, and its lobes the same length as theirs.

14. *Messerschmidtia volubilis*, Röm. & Sch. Syst. iv. 541; Don, Dict. iv. 370;—*Tournefortia volubilis*, Linn. Sp. 201 (*non R. & P.*); DC. (*in parte*) Prodr. ix. 523; Lam. Dict. v. 358, tab. 95. fig. 2 (*non 1 nec 3*); Gaertn. Fr. i. 365, tab. 76. fig. 2; Fresen. (*in parte*) in Mart. Fl. Bras. xix. 53;—scandens, ramulis tenuissimis, fistulosis, rufo-pubescentibus; foliis parvis, lanceolato-oblongis lanceolatisve, acutis, læte viridibus, utrinque scabridule rugulosis, supra laxè pilosis vel subglabris, subtus adpresse puberulis; petiolo puberulo, tenui, limbo 6-plo brevior: paniculis sæpius terminalibus, subpuberulis, bis vel ter dichotome divisis; ramis tenerrimis, valde divaricatis, spicatifloris; floribus breviter pedicellatis, parvis; sepalis laciniisque corollæ lanceolato-subulatis; drupis 4-gastri-globosis, centro depressis, glabris, subdiaphanis, 4-maculatis.—In Antillis: *v. s. in herb. Mus. Brit.* (ex hb. Miller.).

This very slender species is probably confined entirely to the Antilles; but many plants assigned to it should be excluded: Gardner's No. 1785, from Ceará, referred here by Prof. A. DeCandolle, is *M. Salzmanni*; and others included by Prof. Fresenius should in like manner be rejected,—for instance, var. *hirsuta*, from Bahia (Blanchet), and others from Rio de Janeiro (Schott, 4939) (D. 1595). Its branches are scarcely more than  $\frac{1}{4}$  line in thickness, with axils 6–7 lines apart; the leaves are 12–15 lines long, 5–6 lines broad, on a petiole 2 lines long; the peduncle is 3 lines long, the primary and secondary branches 3 lines, the ultimate spikes 12–15 lines long. In Gaertner's figure the position of the nucule is reversed: the radicle of the embryo ought to point to the summit.

15. *Messerschmidtia velutina*, G. Don, Dict. iv. 370;—*Tournefortia velutina*, H. B. K. 379, tab. 201; DC. Prodr. ix. 524;

—scandens, ramis teretibus, cano-tomentosis; foliis ovato-oblongis, obtusule acuminatis, imo rotundatis aut acutiusculis, crassis, utrinque lanato-tomentosis, subtus albidis; petiolo cano-tomentoso, limbo 6-plo brevior: paniculis terminalibus, dichotomis; ramis plurimis, subalternis, diffuse divaricatis, spicatifloris, cano-tomentosis; floribus unilateralibus, remotiusculis; sepalis lanceolatis, pubescentibus; drupis hispidulis, 4-gastris.—In Mexico, prope Acapulco (*non vidi*).

Axils  $\frac{3}{4}$ –1 inch apart; leaves 3–3 $\frac{1}{4}$  inches long, 13–16 lines broad, on a petiole 6–7 lines long. The terminal panicle is diffusely divided into about ten unilateral spikes, 4–5 lines apart, each about 3 inches long, with sessile flowers 1–2 lines apart.

16. *Messerschmidtia spigelliflora*, nob.;—*Tournefortia spigelliflora*, *A. DC. Prodr.* ix. 525;—scandens, ramis teneribus, teretibus, fistulosis, patenter rufulo-pilosis; foliis elliptico-oblongis, acuminatis, acute mucronulatis, imo obtusis, membranaceis, utrinque albo-tuberculatis et sparse adpresso-pilosis, supra fusco-, subtus pallide viridulis, nervis tenuibus obscuris; petiolo dense piloso, limbo 12–15-plo brevior: panicula terminali, longiuscula, laxe 3–4-chorome divisa, geniculatim flexuosa, dense pilosa, ramis ultimis curvulis, spicatifloris; floribus crebre 1-seriatis, pilosis; sepalis lobisque corollæ acutissime subulatis.—In Guiana Britannica: *v. s. in herb. meo* (Schomb. 749).

A climbing plant, with slender branches  $\frac{1}{2}$ – $\frac{3}{4}$  line thick, with axils 1 inch apart; leaves 3–3 $\frac{1}{2}$  inches long, 1 $\frac{1}{4}$ –1 $\frac{1}{2}$  inch broad, on a petiole 3 lines long; panicle 5 inches long and broad, with geniculated conjugated divisions widely spreading, three times dichotomously divided; peduncle 1 inch long; primary branches 6–20 lines, secondary 9 lines, spicated branches 1 $\frac{1}{2}$  inch long; sepals 1 $\frac{1}{4}$  line long, tube of corolla narrow, straight, 3 lines long, lobes of border 1 line long; anthers included, cohering at their summits; style elongated, turbinate thickened at its apex, and surmounted by a rather long, obtuse, pilose stigma.

17. *Messerschmidtia membranacea*, Gardn. *Lond. Journ. Bot.* i. 181;—*Tournefortia membranacea*, *DC. Prodr.* ix. 530;—*Tournefortia floribunda*, *Fresen. (non H. B. K.) in Mart. Fl. Bras.* xix. p. 54;—scandens, ramis compressis, flexuosis, subfistulosis, ferrugineo-tomentosis; foliis ovato-oblongis, imo rotundatis aut subcordatis, apice acutis et breviter mucronatis, supra pilis brevibus rigide adpressis incanis crebre tectis, subtus pallidioribus, densius velutinis, in nervis costa-

que flavido-tomentosis; petiolo tomentoso, limbo 5-6-plo brevior: paniculis axillaribus et terminalibus, flavo-tomentosis, bis dichotome geniculatim divisis, ramis ultimis spicatifloris; floribus 1-seriatis, crebre sessilibus; sepalis laciniisque corollæ valde subulatis, tubo superne inflato; drupis 4-gastris, glabris.—In Brasilia: *v. v.* in prov. Rio de Janeiro, ad Botofogo; *v. s. in herb. variis*, ex eodem loco (Gardn. 82).

Prof. Fresenius makes this plant identical with Kunth's *Tournefortia floribunda*, which does not belong to *Messerschmidtia*; it differs in its compressed flexuous subfistulose branches, its acute (not acuminate) leaves, covered with short rigid hairs (not slenderly pubescent nor cano-tomentose beneath); it differs also in its longer style and stigma. In Kunth's plant the drupe is globular, containing four globose nucules. In this species the flattened branches are  $1\frac{1}{2}$  line broad, with axils 1-2 $\frac{1}{2}$  inches apart; the leaves are 2 $\frac{1}{2}$  inches long,  $1\frac{1}{2}$ -1 $\frac{3}{4}$  inch broad, on a petiole 4-6 lines long: the panicle, widely expanded, is 4 inches long, on a peduncle 6 lines long; primary and secondary branches 9 lines long, tertiary spicated, 3-6 lines apart, each 9-18 lines long; sepals  $\frac{1}{2}$  line long; tube of corolla less than 1 line long, the rest all conformable to the generic character; drupes glabrous\*.

18. *Messerschmidtia Salzmanni*, nob.;—*Tournefortia Salzmanni*, DC. *Prodr.* ix. 524; *Fresen. in Mart. Fl. Bras.* xix. p. 51;—scandens, ramis teretibus, fistulosis, subflexuosis, simplicibus aut breviter ramulosis, flavide aut ferrugineo-tomentosis, axillis subnodosis; foliis oblongo-lanceolatis vel lanceolatis, sensim acuminatis, imo rotundatis, supra pilis brevibus velutino-tomentosis, subtus pallidioribus, ferrugineo-tomentosis; petiolo superne canaliculato, dense ferrugineo-pubescente, limbo 9-10-plo brevior: paniculis in ramulis alaribus terminalibus, flavo vel ferrugineo-tomentosis, bis dichotome divaricato-divisus, ramis conjugatis vel simplicibus, ultimis spicatifloris; floribus remotiusculis, brevissime pedicellatis; sepalis laciniisque corollæ longe subulatis.—In Brasilia, prov. Bahia (Blanchet, 3787-3789, et Claussen, 412-419); *v. s. in herb. meo*, Ceará (Gardner, 1785); *in herb. Mus. Brit.*, Bahia (Luschnatt).

A plant with long tortuous scandent branches, with axils  $\frac{3}{4}$ -2 inches apart; leaves 2 $\frac{1}{4}$ -3 $\frac{1}{2}$  inches long, 1-1 $\frac{1}{4}$  inch broad, on a petiole 3-4 lines long; peduncle of inflorescence 5 lines,

\* A drawing of this plant, with sectional details to show the generic structure, will be given in the second volume of my "Contributions," Plate 53 B.

two primary divaricating branches 6 lines long, bearing five alternate floriferous spikes 3 lines apart, 12–20 lines long; sepals  $\frac{1}{2}$  line, tube of corolla  $1\frac{1}{4}$  line, segments 1 line long; anthers included, cohering by their summits; ovary glabrous; style slender, incrassated at the apex, and surmounted by a pilose elliptical stigma; drupes much depressed, deeply 4-lobed,  $1\frac{1}{2}$  line in diameter, glabrous, the nucules incurved, dorsally tuberculated.

\*\*\* Paniculæ terminales et subpyramidatæ.

19. *Messerschmidtia candidula*, nob.;—*Tournefortia sericea*, DC. (non Vahl) *Prodr.* ix. 524; *Fresen. in Mart. Fl. Bras.* xix. 54;—scandens, ramulis rectiuscule elongatis, teretibus, subfistulosis, molliter cano-tomentosis; foliis ovatis, brevissime acutis, imo rotundatis aut subcordatis, supra dense viridibus, rugulosis, sparse molliter sericeo-villosis, in nervis sulcatis, subtus dense albo-lanato-tomentosis; petiolo tomentoso, limbo 20-plo brevior: panicula terminali, anguste pyramidata, albo-tomentosa, alternatim breviter ramosa, cum ramulis brevissimis et approximatis, paucifloris; floribus minusculis, crebris, obsolete pedicellatis; sepalis corollæque laciniis lineari-setaceis, pubescentibus, tubo imo glabro, superne densissime villosa; drupis depresso-globosis, 4-gastris, pilosis.—In Brasilia: v. s. in herb. meo, Ceará (Gardn. 1078).

This plant has been referred to the *Tournefortia sericea* of Vahl, a species from the Antilles, known only from his short description. It differs from it in its leaves not being glabrous above, and being nearly sessile, in its much denser terminal and pyramidal inflorescence (not axillary and dichotomously divided). Its branches are nearly straight and simple,  $1\frac{1}{2}$  line thick, with axils  $\frac{3}{4}$ – $1\frac{1}{2}$  inch apart; the leaves are  $1\frac{3}{4}$ –2 inches long,  $1$ – $1\frac{1}{4}$  inch broad, on a petiole scarcely more than 1 line in length. The terminal inflorescence is not pedunculated,  $2\frac{1}{2}$  inches long, 1 inch broad, consisting of many alternate branches 1–2 lines apart, each with very crowded short floriferous branchlets 2–4 lines long; flowers on very short pedicels, crowded; sepals  $1\frac{1}{2}$  line long; tube of corolla  $1\frac{1}{4}$  line long, lobes of border  $\frac{1}{2}$  line long; anthers cohering at their apex; the style, thickened at the summit, including the stigma, is  $\frac{3}{4}$  line long; the drupe in its structure quite conforms to the generic character.

20. *Messerschmidtia villosa*, nob.;—*Tournefortia villosa*, DC. *Prodr.* ix. 524; *Fresen. in Mart. Fl. Bras.* xix. p. 52;—ramis teretibus, hirsutissimis; foliis ovatis, acuminatis,

supra sparse pilosis, subtus conferte fulvo-sericeo-villosissimis, petiolatis: paniculis terminalibus, divaricato-dichotomis, aut in ramis axillaribus 1-foliosis, divaricato-dichotomis, fulvo-hirsutissimis; sepalis laciniisque corollæ longe subulatis, villosis, tubi apice villosissimo.—In Bahia (Blanchet, 215, 821, 1151, 2202) (*non vidi*).

The leaves are  $1\frac{5}{8}$ – $2\frac{5}{8}$  inches long,  $1$ – $1\frac{1}{2}$  inch broad, on a petiole 3 lines long; sepals 2 lines long; tube of corolla 3 lines long.

21. *Messerschmidtia subsessilis*, Don, Dict. iv. 370;—Tournefortia subsessilis, *Cham. Linn.* viii. 119; *DC. Prodr.* ix. 521; *Fresen. in Mart. Fl. Bras.* xix. p. 53;—scandens, ramulis tenuiter rectiusculis, teretibus, rigidule ferrugineo-tomentosis; foliis divergentibus, elongato-obovatis, acute acuminatis, imo subrotundatis, utrinque ruguloso-punctatis, e tuberculis sparsim adpresse pilosis, nervis supra impressis, subtus costaque prominulis, fulvo-pilosis; petiolo tenui, rufo-piloso, limbo 15-plo brevior: panicula terminali, subpyramidata, alternatim breviter laxe ramosa, ramis inferioribus rufo-pilosis, imo pluribracteatis, superne ramulos 4 alternos spicatifloros ebracteatos gerentibus, superioribus cum ramulis conjugatis floriferis, aut simpliciter spicatifloris; floribus pedicellatis; sepalis corollæque laciniis longe subulatis, pilosulis, tubo fauce contracta.—In Brasilia: *v. s. in herb. Mus. Brit.*, Pernambuco (Gardn. 1076).

The above plant agrees with Chamisso's description of this species: it is nearly allied to *M. Pohlii*. The slender branches have the axils 6–9 lines apart; the leaves are  $2$ – $2\frac{3}{4}$  inches long, 11–14 lines broad, on a petiole 2 lines long. The terminal inflorescence is 3 inches long; the alternate branches, 2–4 lines apart, are about an inch long; the pedicels are  $\frac{1}{2}$  line long; the sepals 1 line long; the tube of the corolla  $1\frac{1}{4}$ , the segments  $\frac{3}{4}$  line long.

22. *Messerschmidtia Pohlii*, nob.;—Tournefortia Pohlii, *Fresen. in Mart. Fl. Bras.* xix. p. 52;—scandens, ramis subcompressis, fistulosis, rufo-pilosis; foliis ovatis vel oblongis, acute acuminatis, imo rotundatis, supra tomentosis, nervis flavo-pubescentibus, subtus rufescenti-tomentoso-velutinis; petiolo tomentoso, limbo 10-plo brevior: panicula terminali, pyramidata, alternatim divaricato-ramosa, ramis simplicibus et spicatifloris, aut iterum brevissime ramulosis, ramo inferiore sæpe 1-folioloso; floribus sessilibus, dense villosis; sepalis corollæque laciniis longe subulatis; drupis 4-gastris, glabris.—In Brasilia: *in herb. Imp. Vindob.* (Pohl,

3535); *v. s. in herb. Mus. Brit.*, mont. Organens. ad Imbuhy (Gardn. 546).

A very distinct species, having straight elongated branches, with axils  $1\frac{1}{2}$  inch apart; leaves  $1\frac{1}{2}$ – $3\frac{3}{4}$  inches long,  $\frac{3}{4}$ –2 inches broad, on a rather stout petiole 2–3 lines long; the terminal panicle is 6 inches long in flower, 8 inches long in fruit, with twenty to twenty-four alternate patent branches 4–6 lines apart, 1–2 inches long, diminishing upwards, bare at base, the lower ones again branched, the upper ones simply spicate; flowers 1 line apart; sepals rather fleshy, very pilose on both sides,  $1\frac{1}{4}$  line long; tube of corolla fleshy, contracted in the middle,  $1\frac{1}{2}$  line long, its segments  $\frac{3}{4}$ –1 line long; anthers cohering in the mouth by their scabrid summits; ovary and style equal, glabrous; stigma short, conical, pilose, sub-2-lobed.

XX.—*On a point relating to the Histology of Rhynchonella.*  
By Professor W. KING.

*To the Editors of the Annals and Magazine of Natural History.*

Glencoir, near Galway,  
August 10, 1868.

GENTLEMEN,

Dr. Carpenter, according to his letter inserted in the 'Annals' of this month, has taken it upon himself to "think that the scientific world has a right to know" my "present opinions" on a number of points, which he has written out, pertaining to the genus *Rhynchonella* and some other shells. As regards most of these points, it strikes me that I am not by any means required to notice them: there is one, however, on which, considering the way in which it is represented by Dr. Carpenter, I feel myself called upon to say a few words.

It is quite correct that "some twenty years ago" I was led "to believe that certain very minute dark points, which I observed here and there dispersed over the surface of the valves of various fossil species, were the remains of orifices belonging to extremely minute perforations," and consequently to "doubt the absence" of a perforated structure in any palliobranchiate shell. Now it so happens that ample evidence has long been published by which the "scientific world" is enabled to judge of my "present opinion" on the subject to which my "doubt" applies. In a paper of mine, entitled "Notes on Permian Fossils," which appeared in the 'Annals' of April 1856, I inserted a footnote, containing some remarks on the histology